

Two dimensional model for the simulation of tubular reactors for thermal cracking

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Abstract The simulation of an industrial tubular reactor for the thermal cracking of ethane is based on a two dimensional model. The model consists of a continuity equation for each component; an energy equation and a pressure drop equation.

The selection of eddy diffusivity profiles for heat, mass and momentum is discussed and the resulting radial temperature and concentration profiles are presented. Radial velocity-averaged concentration and temperatures are also calculated and compared with the available industrial values. Finally, predictions based on one and two-dimensional models are compared.

Keywords: model system, eddy diffusivity, thermal cracking
